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ABSTRACT

This document presents a conceptual framework within which to view variability in parental alcoholism and children's exposure to alcoholism. The framework considers both individual characteristics of the children and ecological factors. A review of relevant literature on stress, coping, and adaptation among children and adolescents examines the literature on resilient children and on children of alcoholic parents. A study is proposed that would examine resilience and vulnerability in children from alcoholic families. The study design is described, the desired sample is discussed, and a variety of measures are suggested. Several parental alcoholism measures are considered. Two intervention measures are suggested, the Levine Task and the Embedded Figures Task. Physiological measures recommended include sphygmomanometer readings. A number of child and adolescent measures are considered, including measures of demographic information, the Life Events Checklist, the Adolescent Coping Orientation for Problem Experiences, and the Sentence Completion Test. Two measures are included for assessment of the family and social environment and another two measures focus on sibling relationships. Other measures suggested for the study include the Hassles Scale, the Child Behavior Checklist, and the Middle Childhood Temperament Questionnaire. A recommended procedure for the study and suggested analyses of data are included. (Contains over 125 references.) (NB)

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Resilience and Vulnerability in Children of Problem Drinkers: A Review and Proposal for Further Research

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February 1, 1993

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Resilience and Vulnerability in Children of Problem Drinkers[1]

INTRODUCTION

Children and adolescents display extraordinary variance in relative vulnerability and resilience to adverse social conditions. For the past 25 years, stress investigators have examined a multitude of factors related to this unmistakable vulnerability-resilience continuum. Basic research and knowledge have evolved through focus on specific populations: children of lower socioeconomic-status; children with unemployed parents, divorced parents, mentally ill parents and disabled parents; and children and their siblings with psychiatric disorders, physically disabling conditions, or chronic illness.

Concurrently, the study of alcoholism has matured from a narrow focus on the alcoholic to include a spotlight on family systems. As a result, it is now evident that children's exposure to parental alcoholism may result in profound and diverse consequences for their mental health and general development. However, there remain a number of serious limitations in research concerning children and youth living with an alcoholic parent.

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[1] Portions of the text of this paper are based on a 1989 proposal by Audrey L. Begun and Allen Zweben, University of WI-Milwaukee, entitled Adjustment, Stress, and Coping Among Children and Adolescents Living with Alcoholic Parents. I am not only indebted to them for sharing their previous efforts, but also for their direction and feedback on the progression of this work.

Typically, a morbidity model is adopted, presuming "at-risk" status and minimizing consideration of both developmental processes and adaptive/coping mechanisms employed by these individuals. In addition, methodology frequently involves (a) limitations due to reliance upon retrospective or anecdotal data; (b) generalizability limitations resulting from reliance upon clinical samples; (c) incomparability of study results due to a lack of consistency in measures and designs; and (d) reliance upon variables which are not sufficiently complex or comprehensive to adequately represent this population.

The proposed study is designed to be both a cross-sectional and a longitudinal epidemiological effort. Although the emphasis is on physiological responses to stress, the conceptual framework of the socio-cultural covariables selected for this project originated from integration of an ecological perspective of human development, family process research, and family systems models of alcoholism.

One basic assumption is the expectation that children or youth living with an alcoholic parent engage in an ongoing process of adaptation. This assumption represents an atypical perspective towards the target population, because most prior research has been based upon morbidity models designed to identify specific risks or estimate the probability of maladaptive developmental outcomes. Therefore, this project was designed to explore a range of factors which may mediate the

process of adaptation. Inclusion of physiological measures at different points in time, along with measurement of socio-cultural covariables, is integral to the design.

Many of the most relevant developmental processes are not necessarily measurable outcomes, but represent factors which emerge as a function of circular or reciprocal patterns of influence between the developing individual and the social environment. For example, both social competency and problem solving are strongly influenced by an individual's experiences with the social environment; however, both are also influential in determining how the individual is perceived and treated by the environment. Therefore, certain covariates included in this project were selected to represent both current functioning and ongoing developmental processes.

CONCEPTUAL FRAMEWORK

Extending theories of stress and coping, the proposed study includes elements from three general areas that might determine the developmental impact of exposure to parental alcoholism. Comparisons of adjustment and developmental status among children and adolescents will be categorized along the dimensions of (a) variability in qualities of stressors and exposure to stressors--especially the stress induced by parental alcoholism, (b) characteristics of the individuals engaged in the adaptive

process, and (c) family ecological factors and components of the social environment.

Variability in Parental Alcoholism and Children's Exposure

Variability in parental alcoholism and their offspring's exposure includes factors of severity and chronicity in drinking patterns; duration of exposure and age at onset of parental alcoholism; gender of alcoholic parent; and exposure to concomitant stresses (e.g., family legal or economic complications, parental disability or chronic illness, or parental separation/divorce). Each of these influences can contribute to a unique situation that can alter resiliency. For example, exposure to alcoholism is much different for the child whose alcoholic parent maintains little contact versus the child who interacts regularly with the affected parent (although any genetic influences would presumably be comparable).

Individual Characteristics

Individual characteristics include demographic characteristics, physiological differences, temperament and general coping style, and the experiencing of developmental challenges. These characteristics are instrumental in transforming the circumstances in which they occur. Furthermore, the appearance of problem behaviors among groups with particular

characteristics may influence the occurrence of alcoholism. Ultimately, the meaning of any symptom can be better understood within an individual's developmental history, personality and temperament, and even inherited physical attributes. It is therefore fitting that the categories of individuality to be described show some degree of overlap.

Demographic Variables

Demographic characteristics such as age, ordinal position in the sibship, and religion and religiosity have noticeable effects on a child's ability to cope with stressors. The gender of the individual child and the gender configuration of the alcoholic parent-child dyad may also exert strong influence on outcomes. Furthermore, another relevant variable may be race. Although automatic inclusion of this information in studies is sometimes more political than scientific (i.e., the cultural concept of race lacks scientific validity), slight blood chemistry differences at least suggest that racial or ethnic background may be relevant individual characteristics.

Temperament and General Coping Style

Individual differences exist in how physiological response parameters interface with affective processes to regulate the self in response to environmental demands. These constitutional differences may or may not be compatible with healthy outcomes of stressors to which an individual is exposed. For example, no single causal sequence relates temperament to subsequent alcohol

consumption, but it is likely that some attributes, combined with specific conditions, result in predictable behavior patterns. Many of these attributes may be heritable.

Experiencing Developmental Challenges

The timing of an event may increase or decrease the effects of stress. Perhaps this occurs because developmental challenges not only exert greater influence during sensitive periods of maturation, but also may vary in their meaning from individual to individual. Moreover, an actual count of the number of stressful life events is a useful approach to operationalizing the impact of life challenges. This method can be augmented by also including a measure of the relatively minor stresses of everyday life. Small events actually have the advantage of involving more manageable units of behavior, and such events will occur with relatively high frequency even in brief prospective studies. The use of specific stressful events (e.g., parental divorce or alcoholism) as independent variables is an example of stressful life events research.

Physiological Differences

Isolating biological characteristics that dependably differentiate alcoholics from nonalcoholics is important, because then it can be determined if these same factors exist in persons at risk to develop the problem, i.e., offspring of alcoholics. Children of substance abusers may differ significantly from other children in several physiological measures. Biochemical markers

include neurotransmitter and hormonal level differences, as well as altered responses to such substances. Neurophysiological differences may include EEG variations, evoked-potential responsiveness, or an over-representation of neurological variations in handedness, cognitive development, and information-processing style. Psychophysiological measures may reveal differences in reactivity on cardiovascular and electrodermal reactivity in response to stress.

Ecological Factors

Ecological factors include the quality of children's relationships with both alcoholic and non-alcoholic parents, the quality of sibling relationships, parental stress levels, and other family climate factors. In addition, family system roles, rituals, and dynamics surrounding alcoholism and the alcoholic parent; extra-familial support systems (e.g., school, extended family, significant adults, and peers), and access to or involvement with formal and informal helping systems (self-help groups, social agencies, community organizations) all contribute to a unique family ecology.

In sum, the proposed study is designed to address complex issues of adjustment and coping among children and adolescents living with an alcoholic parent. It is anticipated that the results of this investigation could extend current knowledge

about this population, from a series of simple, linear models of impact, to a more integrated developmental and ecological perspective. Furthermore, it is expected that study of this special population will extend current knowledge concerning the general processes of coping, adjustment, and adaptation of children and youth experiencing stressful environmental conditions.

REVIEW OF RELEVANT LITERATURE

Stress, Coping and Adaptation among Children and Adolescents

Beginning in the early 1970's, a number of theorists, clinicians, and researchers have struggled with identifying the processes of coping, adaptation, and adjustment to stressful events (Mechanic, 1974; Selye, 1974; White, 1974). Among children and adolescents, a sizable body of research has evolved to elucidate the developmental impact of exposure to a variety of stressor events during the first two decades of life. Much has been learned about how children adapt to changes in family composition: for example, parental divorce and remarriage (Hetherington & Camara, 1984; Stolberg & Bush, 1985), or the birth of a sibling (Dunn & Kendrick, 1982, Nadelman & Begun, 1982). These stressors represent short-term, specific developmental or non-normative events, which may or may not be associated with long-term developmental consequences. In general, it appears that long-term adjustment in children and adolescents is more closely related to sustained conditions of stress, rather than short duration exposure to specific crises (Hetherington, 1984; Rutter, 1979). Relevant examples include the experience of chronic psychiatric or physical disability in a parent (Anthony, 1987; Fisher, Kokes, Ransom & Burge, 1987; Sameroff, Seifer & Zax, 1985), developmental disabilities in a

sibling (Begun, 1987; Crnic & Leconte, 1986), and parental alcoholism (references in section II).

Investigation of Stress and Coping

It is crucial to develop more comprehensive, reciprocal explanatory models, built upon a foundation of earlier research and capitalizing upon the capacity to develop complex multi-variate models of relationships among factors. It is the process, not the variable, that determines whether a variable functions as a vulnerability factor or protection factor. Thus it is necessary to search for processes that protect against risk mechanisms. Some of the mediating mechanisms include alteration of the risk (e.g., through inoculation); alteration of risk exposure; reduction of negative chain reactions; and the effects of personal relationships, task accomplishment, opportunities, or turning points (Rutter, 1987). Additionally, the timing of an event may increase or decrease stress effects due to maturation or change in the personal meaning of the event (Rutter, 1985).

In developing integrative models, attention must be paid to a host of pre-dispositional, potentiating, and protective factors that influence children's adaptation to stressful situations. These include: characteristics of the stressors, characteristics of the individuals involved, and characteristics of the social environment (Rutter, 1979; Seifer & Sameroff, 1987; Werner, 1984; Werner & Smith, 1982). These three components constitute an outline for this review.

Stressor Events

There is no known quantifiable degree of hardship inherent in various life events. Eventually, it may be possible to assign relative "weights" by rank ordering a specific group of events, but it is not likely that universally applicable ratings for "degree of stressfulness" can be generated (McCubbin, Joy, Cauble, Comeau, Patterson & Needle, 1980). Instead, it may be more useful to look at the individual's interpretation of events.

One factor that relates to stressfulness of events is pervasiveness, or the magnitude of change involved. This concept reflects observations of the multiplicative effects of multiple stressors (Rutter, 1979), as well as the concept of clustered life events (Dohrenwend & Dohrenwend, 1977). Exposure to concurrent multiple stressors or a series of stresses, often results in dramatic effects for children and adolescents, whereas exposure to a single stress typically carries no appreciable risk. Thus, in order to understand the impact living with an alcoholic parent has on children and adolescents, it is important to assess the impact on the various realms of developmental experience.

Individual Characteristics

In theory, general coping-related traits such as temperament or disposition (Garmezy, 1983; Murphy & Moriarty, 1976; Rutter, 1978) and stress tolerance (Werner, 1984) are fairly stable over time, and therefore can be measured as traits. However, these

characteristics may not represent enduring traits or predispositions across all types of stressful events (Appley & Trumbull, 1977; Monat & Lazarus, 1977). Recent studies of problem solving among children and adolescents indicate that the most adaptive individuals do not consistently apply the same approaches to different tasks or problems: they are able to recognize that a strategy useful in one context may be ineffective or maladaptive in another context (Dodge, 1985; Spaniol & Jung, 1987). For example, it may be advantageous under some conditions to employ techniques for handling affect or the physiological experience of stress; yet at other times it is more effective to utilize problem solving or cognitive redefinition approaches (Spaniol & Jung, 1987; Spivack & Shure, 1985).

Therefore, in order to evaluate the adaptive processes of children exposed to parental alcoholism, it is useful to assess their repertoire of potential solutions to problem situations. The approach of relating individual traits to specific aspects of adaptation can provide a supplement to information generated through the traditional approach of inferring global adjustment competence from each separate trait (Sarason, 1981). Maladjusted children demonstrate deficiencies in interpersonal cognitive or social problem-solving skills, such as the generation of alternative solutions, consequential thinking, and the ability to project the future (Spivack & Shure, 1985; Weissberg, Gesten, Carnrike, Toro, Rapkin, Davidson & Cowen, 1981). Training in

these skill areas has been associated with improved social adjustment and positive effects on behavior among school aged children (Schelkun, Tableman, Genero & Cooper, 1987; Shure & Spivack, 1978, 1979). Furthermore, children may need to learn to cope with their own temperamental style, as well as cope with environmental stress--especially if their coping style is not well-matched with the environment (Compas, 1987).

In addition to studying characteristics intrinsic to individuals (i.e., gender, disposition, birth order, intelligence), an understanding of the influence of developmental status upon adaptive processes is helpful. Different developmental periods are associated with different vulnerabilities and resiliencies, and it is likely that different coping strategies may emerge during particular developmental periods (Berkowitz & Begun, in press). Individuals accrue experiences over time which mediate their adaptive responses (Murphy, 1962). Spaniol and Lannan (1984) have even suggested that new coping skills are dependent upon the development of previous coping skills, in a hierarchical fashion analogous to the development of cognitive skills.

Notwithstanding that children often acquire increasing range and sophistication of coping strategies with maturity and experience, older children may also demonstrate the development of "meta-adaptation" or "meta-coping" systems: knowing about how to adapt. Meta-adaptation implies intentional actions, such as

the selection of relevant information, planning, and initiating a sequence of activities. This construct reflects an awareness of the ability to change the environment, as well as adapting to it; the term "competence" has also been applied as a closely related phenomenon (Bruner & Connolly, 1974).

Resilient children. Research into the effects of stressful life events provides examples of both successful and unsuccessful adaptation among children and families. Despite dire predictions, a significant proportion of children with extremely stressful lives emerge as competent and creative individuals (Hetherington, 1984). One consistent conclusion derived from review of the past twenty years of research in coping and adjustment is that no single factor or variable is sufficient to explain different outcomes. Obviously, a confluence of factors mediate the individual's adaptive responses.

For example, invulnerable children appear to possess these broad factors: (a) positive dispositional characteristics (good temperament, internal locus of control, high self-esteem, autonomy), (b) a supportive family environment (order, parental warmth, cohesiveness), and (c) a supportive individual or agency to provide the child with aid and a positive role model (Garmezy, 1983). Stated another way, children who overcome adversity generally have a positive relationship with a competent adult, are good learners and problem-solvers, are engaging to other people, and have areas of competency or perceived self-efficacy

valued by self or society (Masten, Best & Garmezy, 1990). In some cases, the critical caregiver bond is not formed with parents, but rather with surrogate parent(s) recruited by the resilient child. Later in development, these children typically experience a close bond to individuals outside the family system, such as close friends, special teachers, and elders acting as confidants or counselors (Werner, 1984).

Resilient children identified by the Rochester Child Resilience Project have the following attributes: global self-worth, empathy, realistic control attributions, social problem-solving strategies, and self-esteem. Predictors having to do with parents include: reports of easy child temperament, nonseparation of child and primary caregiver, and the availability of child-care support to the primary caregiver, both generally and specifically from the father figure (Cowen, Wyman, Work & Parker, 1990). An internal locus of control, the child's popularity with peers, and ego development appear to be protective factors against stress (Luthar, 1991). Self-understanding (adequate cognitive appraisal, appraisal of capacity for and consequences of actions) is a protective factor by allowing individuals to build on past experiences to anticipate future ones (Beardslee, 1989). Resilience is also associated with taking responsibility for younger siblings (Rutter, 1985). Moreover, non-sex-typed (androgynous) subjects show greater resilience to recent stress (Roos & Cohen, 1987).

Social Environment

Despite awareness of the significance of social networks and social systems in moderating the effects of stressful experiences, there is little consistency in the conceptualization of the salient dimensions (Gore, 1978; Hetherington, 1984). Two components of social environment that do have relevance for children and adolescents are the intra-familial ecological context of parents and siblings, and the extra-familial social systems of kin, peers, school, and helping networks.

The family component may serve either an exacerbating or ameliorating function for the individual engaged in adaptive efforts. The functional status of the family system clearly affects the physical and emotional health of children and adolescents living in the system (Burnside, Baer, McLaughlin & Pokorny, 1986; Fisher, Kokes, Ransom & Burge, 1987). Secondly, it is from the family and socio-cultural background that many beliefs, values, and attitudes are derived. Not only do these represent products of socialization, but they influence the individual's interpretation of events and development of adaptive strategies. Thus the family may also provide a framework or institutional means of responding to certain events.

Two major subsets of the family system that have great developmental relevance to children and adolescents are parent-child relationships and the sibling relationships. The impact of parental characteristics and parenting behavior on

adjustment has received considerable research attention over the years, and the influence of siblings upon development of individuals has become a more recent focus of attention.

Intra-familial social environment: parents. Caretakers can help to restore equilibrium by either decreasing the child's exposure to a stressor, or by serving to enhance the child's resiliency and coping competence (Werner, 1984). The family can also help reduce a child's anxiety, provide resilient models for identification or imitation, or engage in help-seeking for the child. A critical element in the rearing of resilient children is the presence of a responsive caregiver who supports the child's efforts to develop self-regulation in making the transition from a dependent infant to an autonomous individual (Murphy & Moriarty, 1976). Parents of stress-resilient children generally perceive themselves as nurturing and effective caregivers, receive support from others, utilize positive discipline practices, and describe their children as having positive early temperaments (Wyman, Cohen, Work & Parker, 1991).

Beyond the nature of the parent-child relationship, the quality of actual parenting influences (in relatively predictable ways) how children will develop (Baumrind, 1971; Weinberger & Ford, 1987; Sameroff, 1987). Hostile, inconsistent parenting predicts the development of socially incompetent, aggressive children; proactive methods of parental teaching (as well as warm, responsive parenting) have been linked with development of

social competence and peer acceptance (Pettit, Dodge & Brown, 1988; Putallaz, 1987). Ego-resilient children tend to have parents who are competent, loving, compatible, patient, integrated, and have shared values; ego-brittle children come from homes marked by discord and conflict (Block & Block, 1980; Garmezy, 1985).

In order to adequately assess the impact of living with an alcoholic parent, it is instructive to review research addressing family process and parenting functions among families with a mentally ill parent (Anthony, 1976; Mills, Puckering, Pound & Cox, 1985) or a physically disabled/chronically ill parent (Thurman, 1985). Although there are some unique components of parental alcoholism as a disabling condition, parallels and similarities must exist with other forms of parental disability. Such parents perform many of their caretaking/child rearing functions differently from the normative parent population, and often expose their children to concomitant atypical experiences. Both of these differences may influence development.

Intra-familial social environment: siblings. Throughout the lifespan, siblings represent a significant element of the individual's social environment (Cicirelli, 1985; Goetting, 1986; Lamb, 1982). Children facing adverse family environments sometimes develop intense sibling loyalties in response to parental neglect (Bank & Kahn, 1982). Therefore, an exploration of sibling relationships (especially those developed in response

to parental dysfunction) may contribute significantly to knowledge about the linkage of resources to the demands in a child's social environments.

First, the sibling relationship constitutes an arena in which socialization of each individual is affected. This occurs through delivery of reinforcement paradigms; imitation and modeling; translation of social expectations, norms, and directives; and rehearsal of social roles. Second, a sibling caretaker may be able to partially compensate for the caretaking deficits of an impaired parent. Third, it is possible that the "required helpfulness" experienced among siblings may contribute to resilience. Required helpfulness is described by Rachman (1979) as a performance demand by the social environment to perform difficult acts in order to ensure the welfare of significant others (e.g., incapacitated parents or vulnerable siblings). The successful accomplishment of these often difficult acts changes the individual through enhancing a sense of worth and competency, heightening morale, boosting motivation and persistence, increasing tolerance, and raising performance levels.

It is also necessary to consider the effect of emotionally, mentally, and physically handicapping conditions of one member of the sibship upon sibling roles, sibling adjustment, and inter-sibling affect (Begun, 1987; Crnic & Leconte, 1986; Daniels-Mohring & Bakeman, 1987; San Martino & Newman, 1974). If

one child is adjusting poorly to a family stressor, it is possible that the siblings will be affected by that individual's behavior, (in addition to any effects of the primary family stressor). It is also critical to assess the variability of adaptive responses among siblings, as well as to do comparisons across families. Finally, the study of siblings can reveal the non-shared environmental influences in behavioral development and the adjustment differences within pairs of siblings (Daniels & Plomin, 1985; Rowe, Rodgers, & Meseck-Bushey, 1992).

Extra-familial social environment. This sphere requires consideration of both the family's support system and the extra-familial personal resources of individual family members. The availability of major social support networks such as neighborhood, kin, and mutual self-help groups is relevant to understanding family coping (McCubbin, Joy, Cauble, Comeau, Patterson & Needle, 1980). However, there are no concise models for operationalizing the role of these systems in mediating family stress. Watts and Hernandez (1982) caution that the presence of specific resources does not imply actual availability or use by individuals, and very little is known about how such resources are distributed within the family system. In order to understand family adaptation processes, it is important to assess the nature of the support system, the specific functions served by the system, and the cost (in resources and energy) that are required to maintain the support system.

Pattison (1977) suggests that the existence of social support networks provides a cushioning effect for individuals confronted with a variety of stressors. Both size and degree of symmetry in the personal support system are variables correlated with mental health status. It has been repeatedly observed that children living under conditions of family dysfunction or stress, yet who are involved with a significant other outside the nuclear family, appear to be relatively well protected from negative adjustment outcomes (Kauffman, Grunebaum, Cohler & Gamer, 1979; Werner & Smith, 1982; Wilson & Orford, 1978). However, interpretation of the data correlating children's friendships with social adjustment is confusing: it is equally plausible that the socially competent and well-adjusted child is better able to develop close friendships, or the child with more close friends is better able to develop social competency.

School conditions which mitigate the effects of stress at home include the setting of appropriately high standards, effective feedback from teachers, ample use of praise, good behavior models, and provision of opportunities to experience positions of trust and responsibility (Pines, 1984). Teachers are able to provide instrumental support as well as serve an informational role in the lives of many children (Fu & Goodwin, 1987). Research concerning the social world of parents, peers, and schools provides convergent support for the significance of structure and predictability in the social environment as a pro-

adaptational feature (Hetherington, 1984).

Children of Alcoholic Parents

Most of the symptoms popularly associated with being the child of an alcoholic are not unique to this situation (Windle & Searles, 1990). Contrary to popular belief, most individuals who emerge from such settings do not suffer from severe psychopathology. Moreover, clinical characteristics attributable to children of alcoholics (e.g., difficulties with intimate relationships) are similar to those of other adults from families with other dysfunctions (Fisher, Jenkins, Harrison, & Jesch, 1992). Therefore, finding the factors that distinguish stress-resilient from stress-affected individuals necessitates careful scrutiny of these children's entire developmental sphere.

Scope of the Problem

Estimates of the number of American children living with an alcoholic parent vary considerably: from seven to 15 million children under the age of 18 (Deutsch, 1982; Stark, 1987; Werner, 1986; Woodside, 1983). Overall, there are an estimated 28 to 29 million offspring of alcoholic parents in the United States (MacDonald & Blume, 1986). It is difficult to accurately estimate the number of children experiencing life with an alcoholic parent, due to the tremendous variability in the means and measures utilized for data collection. Estimates may include adult offspring or include only those children under the age of

18 years. Moreover, there is little consistency in terms of the criteria for identifying parents who are "alcoholic" or abusive of alcohol. Some of the estimates may be generated from clinical samples of alcoholic individuals with families, or from community-based samples. All efforts to estimate the size of this population are hampered by a lack of confidence in our ability to detect and identify the true alcoholic (Wilson & Orford, 1978), and the relatively low rate of self-identification among these children (Weddle & Wishon, 1986).

Relevance

Current professional attention to the population of children with alcoholic parents has crystallized as a result of pressure from four contemporary forces. First, mental health and child welfare professionals have identified children of alcoholic parents as being disproportionally over-represented among the population of children and youth entering into the mental health, juvenile justice, exceptional education, and out-of-home placement service delivery systems (Chafetz, Blane & Hill, 1971). As a result, there is a pressing need for development of theory and knowledge around the issues of specific risk and resiliency factors related to this population.

Second, the field of alcohol treatment has identified offspring of alcoholic parents as a high-risk population--relative to the general population--for developing alcoholism or substance abuse difficulties (Cotton, 1979; Goodwin, Schulsinger,

Hermansen, Guze & Winokur, 1973; Goodwin, Schulsinger, Moller, Hermansen, Winokur & Guze, 1974; McLaughlin, Baier, Burnside & Pokorny, 1985; Rydelius, 1981; Tarter, Alterman & Edwards, 1985). For instance, odds of alcohol dependence were increased by 167% among those with alcoholism in both first and second (or third) degree relatives (Dawson, Harford & Grant, 1992). Therefore, professional objectives should incorporate an understanding of the specific nature of risks, vulnerabilities, and inoculating factors associated with inter-generational transmission of alcoholism.

Third, the alcohol treatment field has shifted some of the focus from treatment of alcoholic individuals towards greater consideration of their social context, including family systems. This perspective has assimilated the "enabling" characteristics of family systems, but has also shifted to consideration of the adjustment of family members, including the development of children in the alcoholic's family. Thus, in addition to concern with the probability of offspring becoming alcoholic, research efforts are directed towards the more general purview of mental health risks and developmental challenges faced by the children of alcoholic parents.

Despite the proliferation of programs offered to children of alcoholics, not enough is yet known about which children are most vulnerable and which will remain relatively well adjusted. There is a lack of information concerning the specific population most

suitable for intervention, and how to design interventions which are responsive to the specific aspects of vulnerability experienced by these children. Although more information is now available, there is a need to identify the circumstances associated with different adjustment patterns among children living with an alcoholic parent, in order to devise the most suitable interventions.

Finally, a "grass roots" movement has evolved around support and intervention for adult offspring of alcoholic parents. In 1983, the National Association for the Children of Alcoholics Foundation was established, to support research and public awareness of issues. Various forces acting in conjunction have resulted in a series of efforts to assess the magnitude of the social problem, and to interpret the relationship between parental alcoholism and developmental outcomes. Nevertheless, any information derived from the adult children of alcoholics movement should be examined with caution, because this well-meaning cottage industry often makes assertions about diagnosis and treatment that are not based on sound scientific inquiry. (Professionals often make the same error by supporting their hypotheses with biased conclusions drawn from poorly controlled studies and anecdotal reports.)

Consequences of Parental Alcoholism

There is general professional consensus that children of alcoholic parents are at greater risk for developing alcoholism

(as well as a host of non-alcohol related mental health complications) than children in the general population (El-Guebaly & Offord, 1977; Russell, 1990; Watters & Theimer, 1978). At least three types of mediating variables could account for the difficulties of children of problem drinkers in adulthood: a genetic factor, specific environmental mechanisms, and general environmental mechanisms (i.e., those not specific to families where the parents drink excessively) [Velleman, 1992]. However, a number of significant lacunae exist in our knowledge about children with alcoholic parents. Currently, there is no unifying theory which can adequately explain the effects of parental alcoholism on the mental health of children (Lord, 1982). In particular, the specific factors most relevant to adaptation and coping with parental alcoholism are not fully understood, and the nature of interactions among these factors is not elucidated.

A number of studies suggest that one component of the transmission of alcoholism is the exposure to specific familial conditions (Beardslee & Vaillant, 1986; Bennett, Wolin, Reiss & Teitelbaum, 1988; Cotton, 1979). Although the offspring of alcoholic parents are more likely than individuals with non-alcoholic parents to develop alcohol-related difficulties, there is no consensus regarding which subgroups of these children are susceptible to non-alcohol related maladaptive consequences (El-Guebaly & Offord, 1977; Watters & Theimer, 1978). However,

family environment models of the transmission of alcoholism can provide insight into the mechanisms by which children living with an alcoholic parent develop mental health risks.

First, it is clear that children and adolescents acquire many of their complex behaviors through socialization processes involving imitation of relevant models. Just as in a variety of socialization outcomes (e.g., sex roles, social interaction styles, achievement orientation), it is possible that children acquire portions of their coping and adaptive repertoires through observational learning and imitation. Children and adolescents living with an alcoholic parent may learn to rely upon the use of alcohol as a coping strategy (McLaughlin, Baer, Burnside & Pokorny, 1985). Moreover, alcoholic adults often exhibit other types of inappropriate or insufficient adjustment, so it is possible that these children are at risk of acquiring non-alcohol-related adaptation difficulties via this mechanism. Thus, it is important to relate children's adaptive approaches to those utilized by their parents, in order to assess the adequacy of this socialization model in explaining the transmission of adjustment difficulties between alcoholic parents and their children (Dadds, 1987).

Second, parental alcoholism may result in modification or distortion of the general environment in which children and adolescents exist and develop (Chafetz, Blane & Hill, 1971; Clair & Genest, 1987; Ervin, Little, Streissguth & Beck, 1984; Moos &

Billings, 1982; Moos & Moos, 1984; Seilhamer & Jacobs, 1990). The most evident consequences involve the teratogenic effects of fetal exposure to maternal alcoholism, Fetal Alcohol Syndrome (Coles, Platzman & Smith, 1987; Golden, Sokol, Kuhnert & Bottoms, 1982). However, parental alcoholism may be pervasively related to a host of less evident ecological risks to children. For example, child rearing activities may be characterized by unpredictability, inconsistency, or tolerance of deviant behavior, resulting in deleterious consequences to the mental health of the children (Miller & Jang, 1977). Therefore, it is important to develop an understanding of how parental alcoholism relates to the family environment. It is also important to evaluate the extent to which a non-alcoholic parent can compensate for the environmental risks contributed by an alcoholic parent (Bennett, Wolin, Reiss & Teitelbaum, 1988; Jacob & Leonard, 1986).

Third, many of the consequences associated with being the offspring of an alcoholic parent may be compounded by the emergence of secondary effects. For example, the experience of developmental delays, hyperactivity, learning disabilities, and attentional deficits (all documented as areas of potential vulnerability among children of problem drinkers), may contribute to the development of poor self-esteem, academic difficulties, Type A behavior patterns, or poor social interaction capacities (Golden, Sokol, Kuhnert & Bottoms, 1982; Hegedus, Alterman &

Tarter, 1984; Manning, Balson & Xenakis, 1986; Marcus, 1986; Tarter, Alterman & Edwards, 1985). These problems can in turn lead to alcohol abuse. For example, it has been observed that Type A men ingest twice as much alcohol as non-type A men (Camargo Jr., Vranizan, Thoresen & Wood, 1986).

Biological effects. Early development deficits and other physical or biological factors may interplay with genetics. Variation in body fat levels and body weight regulation is an obvious example. Animal models have shown that environmental manipulations can increase alcohol consumption in alcohol-nonpreferring lines (analogous to small weight gains in genetically thin individuals), but any increase is limited by genetic factors (NIAAA, 1990). Perhaps children of substance abusers also differ significantly in their physiological makeup from other children. For example, alcohol and drugs have been shown to have beneficial effects (e. g., relaxation, normalized brain waves) on children of substance abusers that do not appear in less vulnerable children (Kumpfer, 1987). Sons of alcoholics score significantly higher relative to sons of non-alcoholics on measures of anger after consuming either a placebo or low alcohol drink, but higher doses of alcohol diminish angry feelings in the high-risk group (NIAAA, 1990). Men with a history of family alcoholism show decreased cortisol response to alcohol ingestion. This raises the question of whether this is linked to the observation that cortisol levels remain elevated in certain

people subject to chronic depression (Flach, 1989).

Psychophysiological differences have also been noted between children of problem drinkers and those children whose parents do not have a drinking problem. Using evoked potentials, reduced P300 amplitudes in evoked potentials were noted (even when performance incentives were provided) in young boys who had never drunk, but who were at risk because of their father's drinking (NIAAA, 1990). Finn and Pihl (1987) obtained evidence to suggest that those who have alcoholic fathers and a multi-generational history of alcoholism show greater reactivity to stress (via increased heart rate) and a greater dampening effect from the use of alcohol (which may predispose them to using alcohol in stressful situations). Cardiovascular reactivity (classified on the basis of response to a cold pressor test) showed that high reactors increase norepinephrine levels to both rewarding and aversive incentives and increased cortisol to aversive stimuli, whereas low reactors show no such changes to either incentive (Lovallo, Pincomb, Brackett & Wilson, 1990). Subjects with multiple family members possessing a history of alcoholism are characterized by a pattern of increased sensitivity to the cardiovascular dampening effects of alcohol, cardiovascular hyper-reactivity when sober, and the personality characteristic of experience-seeking (Finn, Earleywine & Pihl, 1992). Hennecke (1984) found that children of alcoholic fathers are central nervous system augmenters, i.e., they tend to exhibit relative

intolerance to pain.

High-risk, nonalcoholic relatives of alcoholics have higher resting heart rates than control subjects, even when recent alcohol use, caffeine, and cigarettes are factored out (Hill, Steinhauer, Smith, & Locke, 1991; Hill, Steinhauer, & Zubin, 1992). This may relate to problems in focusing attention. Cardiac deceleration usually occurs when anticipated stimuli are unpredictable or uncertain. In contrast, certain events seem to cause the heart rate acceleration associated with the stimuli to continue without interruption in these individuals. Adults from alcohol affected families show less discrimination between certain and uncertain conditions under minimal task demands (e.g., counting). Cognitive abilities and information processing patterns may differ for some children of problem drinkers, relative to resilient children or those whose parents do not have a drinking problem. Visuospatial learning performance in persons with a family history of alcoholism is inferior (measured by reduced speed of learning, number of errors, and non-responses) to persons with no family history (Schandler, Cohen & Antick, 1992). Persons with no evident history of alcoholism in the family show a distinctive pattern of skin conductance and heart rate that increases during learning and habituates after learning is achieved, whereas the positive alcohol family history group exhibits a reduced pattern of skin conductance activation.

Nonetheless, it has been observed that many children of

problem drinkers show resilience or invulnerability. For instance, college-age children of problem drinkers are actually more effective in their problem-solving skills (and self-appraisal) than college students whose parents are not problem drinkers (Slavkin, Heimberg, Winning & McCaffrey, 1992). This reinforces the notion that self-assessment skills are a component of invulnerability. (It also suggests that children of problem drinkers who are admitted to higher education tend to be more stress-resilient.)

Some of the advantage may also be due to physiological differences. Acute physical stress (electric shock) has been shown to bring about changes in the neuroendocrine system that protect against later stressors (Hennessy & Levine, 1979). Previous mastery of a threat or challenge through adequate coping responses may "inoculate" some individuals against future threats or challenges. Just as such experienced control may have a profoundly positive effect on outcome variables, experienced helplessness may lead to an overall lack of coping success (Hiroto & Seligman, 1975).

In summary, research concerning stress, coping, and adjustment should be designed to examine factors specific to the stressor events (e.g., parental alcoholism), the relation of individual characteristics to specific aspects of the adaptive process, and qualities of the social environment which serve pre-

dispositional, potentiating, and protective functions. It is also important to consider interactive patterns among these factors. Moreover, it is imperative to carefully assess the child's perspective of parental sources of stress and the provision of support. Information on these variables can augment any comparison of physiological differences among defined groups of children subject to stress.

STUDY OBJECTIVES

The major objective of the proposed research is to expand the knowledge base concerning adaptation, stress, and coping among children and adolescents living with an alcoholic parent. This proposal will integrate components of previous research in human development, family process, stress, and alcoholism. More specifically, the study asks what processes distinguish stress-resilient children of problem drinkers from stress-affected children of problem drinkers. Physiological measures of response to stress will be compared among several groups of children and adolescents. The results are expected to represent a major contribution to knowledge about vulnerability and resilience, as well as to diversify the information upon which clinical interventions with this population are based.

Currently, interventions offered to children presume greater knowledge than is often available--regarding both the experience of living with an alcoholic parent, and effective techniques for improving the coping capacities of children within these families. Although it is unlikely that prevention techniques will be developed "with the efficacy of the polio vaccine," (Moncher, Holden & Schinke, 1991, p. 410), there is considerable room for realistic refinements. Certain variables which have not previously received scrutiny together will be examined as either covariates or correlates of the family groupings.

Study Design

The developmental design combines cross-sectional and longitudinal methods over a four year data collection period. The stability of physiological reactions to mild stress will be examined in each of four family groups. The longitudinal component also reflects the need to track the progression of resiliency in order to understand ongoing factors that influence such adaptation. The experience of parental alcoholism will be explored as a long-term stressor, rather than as a single crisis event. (Subsequent analyses will treat this variable as a multi-dimensional continuous measure, rather than a simple dichotomous variable.) The study will also employ measures of the child's perspective and personal meaning of the stressor event, on the assumption that cognitive appraisal is a key element in the development of a response to stressful events. Another component involves examination of inter-sibling variance, and the assessment of sibling relationships as an environmental condition.

Some general objectives of the proposal can be summarized as follows: to determine the nature of similarities and differences among children and adolescents of problem drinkers and those living in non-alcoholic families; to evaluate individual characteristics associated with different adjustment patterns among children of alcoholic and nonalcoholic parents; to identify the features of parental alcoholism most salient to children and

adolescents, and the relationship of these factors to adaptation; and to interpret the relationships between social environment conditions and adaptation among children of alcoholic and nonalcoholic parents. All of the primary child and adolescent sample will be given discrimination tasks as a mild stressor, during which physiological variables (to be enumerated below) will be monitored. Assessing the relative contributions to patterns of adaptation of the three variable domains (elements of the stressor, individual characteristics, and ecological variables), will be done as an adjunct to or augmentation of the primary focus. Not only will initial task performance, persistence, and physiological response be compared to life stress reports (as well as the other mentioned variable domains), but changes in performance and accompanying physiological response patterns--over a four-year interval--will be examined as well.

The following hypotheses will be examined:

1) When both parents drink excessively, the children of these parents will persist less on discrimination tasks than children whose parent(s) do not drink excessively, or who have only one problem drinker parent.

2) Children of problem drinkers will show greater heart rate and blood pressure increases in response to the demands of a discrimination task than children whose parents are not problem drinkers.

3) Children from multi-generational problem drinking families will show greater physiological response (heart rate and blood pressure) to the demands of the discrimination tasks than children from families with no history or families where problematic drinking is confined to one parent.

4) Chronic exposure to life stressors, in addition to the stress of having an alcoholic parent in the home, will lead to poorer performance on the discrimination tasks.

5) Children and adolescents who rate the intervening stressful life events more positively will show equivalent or improved task performance between the first and second times that the discrimination task is administered, whereas those rating intervening stress more negatively will show poorer performance on the time 2 discrimination task.

6) Anticipatory cardiac deceleration just prior to presentation of the discrimination task will be most evident in children from nonalcoholic homes.

In addition, several exploratory questions will be examined utilizing data from the various paper-and-pencil measures (to be described). These include:

1) Will children of problem drinkers who perform well on the discrimination tasks both at the beginning and the end of the study also be characterized by greater ego development, and/or more support from parents and others?

2) Will children of problem drinkers who have experienced no separations from parent(s), or else have significant experience with another supportive male caretaker differentiate themselves on the discrimination tasks (or physiological measures) from children of problem drinkers who did not report such support?

3) Does parent perception of easy childhood temperament predict any of the variance in the discrimination tasks or physiological measures?

4) Do significant increases in negative life events (or daily hassles) in children's lives over the four-year measurement period result in significant discrimination performance decrements or accompanying heart rate increases?

5) What role do siblings play in adaptive success or failure (e.g., is successful caregiving toward a sibling associated with more positive adaptive ratings or discriminative task performance)?

Sample

Four groups of families will be recruited from both clinical and non-clinical populations. Three of the groups will be composed of families where either the problem drinker is the father or the mother, both parents, or neither parent. Inclusion of comparison groups such as children with normal functioning parents or children with a nonalcoholic, but disturbed parent assists in identifying outcomes associated with alcoholism (West

& Prinz, 1987). Therefore, the fourth group will consist of families in which a parent has presented a nonalcohol-related mental illness within a three year period prior to initiation of the study.

Within the families with an alcoholic parent, the problem drinker should be currently residing with the children. An attempt will be made to balance gender of the parent manifesting the problem in the two groups where the problem involves just one parent. Step-related families will be included in the sample, if all members have been living in the same household for a minimum of five years. Alcoholic single-parent families will also be included, and single parent families will be represented proportionately in the control sample. At the beginning of the project, children will range in age from eight to sixteen. At least two children will be encouraged to participate in each family (in order to facilitate the collection of supplementary data on sibling influences).

In order to maximize the generalizability of the resulting data set, yet enable a sufficiently large sample (300 families--see Appendix A) to be generated from a single geographical area, solicitation of subjects will begin with a cooperative relationship with private community mental health centers. The clinical sample will be recruited through volunteer request letters sent to recipients of alcoholism treatment services at such mental health facilities. These agencies typically contract

with various health maintenance organizations and insurance companies that provide coverage for thousands of individuals. Other families may be recruited through newsletters and volunteer request letters sent to local subscribers of regional health maintenance organizations. In addition, subjects may be recruited through volunteer letters distributed by family practitioners, pediatricians, schools, and community newspapers. In return for participation, each family member will receive $25 for each interview, test battery, or other face-to-face contact with the project ($15 if the contact is less than an hour). Experience suggests that high incentives are vital, both to attract volunteers and to reduce attrition over the course of the study.

Measures

The main dependent variables will involve measures of child and adolescent success in discrimination tasks and the accompanying physiological measures. However, the recruitment of this sample represents a unique opportunity to measure many aspects of the domains thought to impact significantly on resilience and vulnerability. Although there is a smorgasbord of test batteries (and points of view) for measuring important elements associated with childhood resilience, some decisions have to be made out of necessity to restrict the number of covariables. Not only does the study's limited nature restrain the number of related concepts that can be studied, but there

also exists the very pragmatic concern of not overburdening subjects with lengthy reading and writing tasks. Admittedly, some decisions about the composition of the test battery are somewhat arbitrary.

Parental Alcoholism Measures

The following instruments will be used to screen families for assignment to one of the four cells in the design. The Substance Use History and embedded question will also be used to track any changes in these behaviors over the course of the study.

Short Michigan Alcohol Screening Test. An adapted short Michigan Alcohol Screening Test (MAST) has proven to be effective for assessing parental alcoholism (Crews & Sher, 1992). Reduction of the full MAST scale to nine items increases the internal consistency and reliability of the instrument. When the instrument was used by Crews and Sher for assessing fathers' alcoholism, the alpha coefficient obtained was .87. Intraclass correlation coefficients for test-retest agreement ranged from .93 to .95.

Substance Use History Questionnaire. This questionnaire, to be developed by the investigators, will be a paper-and-pencil task adapted from instruments used in previous research. It will be filled out by the parents and will be designed to assess both past and present drug and alcohol use. An important component will be questions about the drinking history of parents,

grandparents, aunts, uncles, and first cousins (second and third degree relatives of the children).

The instrument will also be given to adolescent family members to assess their substance use. It is useful to differentiate among adolescent abstainers, experimenters, and frequent drug users (Shedler & Block, 1990). Such information can be valuable in assessing resiliency. For example, it has been reported that males who undergo substantial personality changes during adolescence are more involved in substance use and tend to use substances in order to cope with the attendant stress levels (Bates & Pandina, 1991).

Children of Alcoholics Screening Test. The Children of Alcoholics Screening Test (CAST; Jones, 1982) is a 30-item self-report inventory to be filled out by all children with a problem drinker parent. Reliability of the instrument is high. Internal consistency and construct validity were re-examined by Dinning and Berk (1989). High CAST scores correlate with low family cohesion and high family conflict. However, CAST scores are best suited for screening respondents, rather than as a dependent variable for identifying relationships with other instruments (Clair & Genest, 1992).

Embedded question re: parental alcohol use. This is a single question designed to avoid the negative implications of the MAST and CAST may suggest to some children about their parents. The question: Have you ever wished that either one or

both of your parents would drink less?, will be included in all of the children's instrument packets. Possible responses are yes, no, and parents don't drink at all. The question has been found to promote disclosure more effectively than other techniques (DiCicco, Davis, & Orenstein, 1984).

Intervention Measures

Levine Task. A version of a discrimination puzzle will be used (Levine, 1975). One designated (primary) child or adolescent subject from each family will be told to figure out the correct parameter in each series of flashcards. Subjects will choose one of the two figures contained on each flashcard in each series. The object is to discover which of the parameters is the correct one (e.g., in a five-parameter version, these could be an alphabetic letter itself, the size of the letter, the color of the letter, the letter's border shape, or the letter's location) in each series. If the figure on the right is chosen by the subject, it could be correct because the correct parameter is either the white letter, the smaller letter, the letter within a circle, the letter on the right, the letter itself, and so forth. Each configuration in a series of examples would be changed, but the correct parameter would remain the same in each series. Veridical feedback on choices would provide information to allow the elimination of incorrect parameters on the way to the solution. Random feedback will prevent subjects from solving the puzzle (Baum, Fleming, & Reddy, 1986). Being so blocked can

produce either resistance, renewed resolve to solve the discrimination task, or learned helplessness--depending upon the number of failures and subject experience prior to the task. In this project, the task will be pilot-tested with different age groups to produce versions of the task that are require effort to solve, but are not impossible.

Embedded Figures Task. This task (Baum et al., 1986) is a series of 16 complex geometric figures each containing a simpler target figure for subjects to locate and trace. Persistence on this task will be measured by the amount of time spent on each of the 16 separate problems. As in the Levine task, Baum et al. (1986) discovered that persistence in locating embedded figures decreased with unemployed subjects. When given veridical feedback on the preceding Levine task, subjects who had been unemployed for less than three weeks or greater than two months performed comparatively, but when given non-contingent feedback, the results diverged. The recently unemployed became more persistent over time, whereas the long-term unemployed became significantly less persistent. The number and duration of stressful events appeared to make a significant difference, and resulted in both positive and negative outcomes.

Physiological Measures

As previously noted, biochemical measures can differentiate children of problem drinkers from children whose parents do not have a drinking problem. However, biochemical markers are

sensitive to interference from level of physical activity, ingestion of food, coffee, and other drugs, cigarette smoking, age and sex changes, and diurnal variability (Pohorecky, 1991). Although these variables can be regulated, it seems more prudent to begin monitoring readily measurable, noninvasive physiological responses (correlated with the discrimination tasks) such as systolic and diastolic blood pressure, and heart rate.

Sphygmomanometer readings. Heart rate, systolic blood pressure, and diastolic blood pressure will be collected with an automatic sphygmomanometer. This instrument will be calibrated with a manual sphygmomanometer and stethoscope. Inexpensive computer modules and software can be used for continuous heart rate monitoring, if desired.

Other Child and Adolescent Measures

Demographic information. Basic socio-demographic information about the children and adolescents will be obtained from the parents. In addition to obtaining information regarding parental ages, ethnicity, education levels, occupations, marital history, and religion, demographic information on the children will include: date of birth, birth order, gender, and brief developmental, educational, and medical histories.

Life Events Checklist. Evidence suggests that the negative effects of stressful life events accumulate like lead poisoning (Cohen & Work, 1988). Although there are several negative life events instruments from which to choose, Johnson and McCutcheon's

(1980) 46-item scale will be used, because it also allows the events to be rated positively or negatively by the children and adolescents. Because the stress scores are on a continuous scale, the measure simplifies data collection for making subsequent comparisons between high and low stress groups. Acceptable test-retest reliability, convergent validity, and discriminant validity have previously been reported (Brand & Johnson, 1982).

Adolescent Coping Orientation for Problem Experiences. This instrument is a coping inventory designed to identify the behaviors that adolescents useful for handling common problem situations (Patterson & McCubbin, 1981). Seven response patterns have been identified from the 95 items on the A-COPE. Validity and reliability estimates are adequate, according to the authors. Pre-adolescent subjects will not complete this measure.

Sentence Completion Test. Ego development may be a factor in differentiating vulnerability and resilience. Adolescents (12 and older) will complete the abbreviated version of the Sentence Completion Test, Form 81 (Loevinger, 1985). The item sum score is used to represent ego development level. The instrument has been found to have acceptable levels of internal consistency, test-retest reliability, and construct validity.

Assessment of Family and Social Environment

Family Adaptability and Cohesion Scale. FACES will be given to each family member over the age of 12 in order to assess the

dimensions of family adaptability and cohesion. The instrument contains 20 true/false items. According to the theory underlying the scale, balanced levels of both dimensions indicate healthy family functioning. The norms for the scale were based on a national survey of 2082 parents and 416 adolescents. Internal consistency was reported to be .90 and test-retest reliability was .84 (Olson, Bell, & Porter, 1982).

Social Support Questionnaire. The SSQ (Sarason, Levine, Basham, & Sarason, 1983) is a 12-item instrument that results in two scores: the number of persons listed as providing social support, and the respondent's satisfaction with available social support. Williams and Corrigan (1992) found that the impact of parental alcoholism or mental illness is diminished in those individuals who score high on this scale.

Sibling Relationships

Sibling Relationship Questionnaire. This questionnaire, developed by Furman and Burmeister (1985), has 51 items, each rated on a five-point Likert scale, ranging from hardly at all to extremely much. The measure covers a range of sibling interaction dimensions (warmth/closeness, relative status/power, conflict, rivalry, and satisfaction/importance) and maintains its applicability across a wide range of ages. Seventeen separate scales, each comprised of three questions, are represented within the dimensions. The internal consistency coefficients mean is .80.

Sibling Inventory of Differential Experience. The Sibling Inventory of Differential Experience (SIDE) can assess the non-shared family and environmental effects among siblings in order to further differentiate factors and outcomes (Daniels & Plomin, 1985). SIDE asks adolescents to compare their experiences with those of their siblings on 73 items comprising 11 scales within the four domains of sibling interaction, parental treatment, peer characteristics, and events specific to the individual. The five-point rating scale assesses relative, rather than absolute scoring of differential experience. Siblings do experience different environments and the differences measured by SIDE appear to be primarily environmental. Two-week test-retest reliability is reported to range from .77 to .93 with a mean of .84.

Other Measures

Small events or hassles (irritations and frustrations) are a useful index of stress (Luthar & Zigler, 1991). Both daily hassles and negative life events can make independent contributions to variation in children's symptoms (Wertleib, Weigel, Springer, & Feldstein, 1987). Furthermore, natural raters (e. g., parent, teacher, spouse) can effectively judge social adaptational status in a social field at a particular life stage (Kellam et al.; 1982, 1983). Thus parents will be asked to complete the following three instruments.

Hassles Scale. Techniques for measuring daily hassles in

children's lives are not yet available. However, the measurement of hassles in the lives of their parents has been shown to make significant contributions to the variance in children's behavior (Wertlieb et al, 1987). The Hassles Scale (Kanner, Coyne, Schaeffer, & Lazarus, 1981) is a 116-item checklist of minor negative experiences encountered in the course of daily living (e.g., interruptions, losing things). Parents will indicate which hassles were experienced in the previous 30 days and rate each endorsed hassle on a mild/moderate/severe scale. Validity and reliability were reported by Kanner et al.

Child Behavior Checklist. This 113-item instrument provides parent reports of symptomatic behavior frequency and severity over the previous year (Achenbach & Edelbrock, 1983). Internalizing and externalizing scale scores are generated. Children with an external orientation show more deterioration in functioning with increasing stress, compared to those with an internal orientation (Luthar, 1991). Test-retest reliability for a one-week interval ranged from .82 to .90 for the various age and sex groupings. Inter-rater reliability (mothers and fathers) ranged between .54 and .74.

Middle Childhood Temperament Questionnaire. This 99-item parent report form uses six-point frequency scales to measure nine dimensions of temperament. The instrument will be completed only on those children between eight and 12 years of age. Reliability and validity data are reported by Hegvik, McDevitt, &

Carey (1982).

Procedure

The first six months of the five-year period will be spent on all facets of preparing for intake--from hiring and training research assistants, to obtaining equipment, instruments, and pre-testing (see Appendix B for a timeline). Potential subject families will be contacted via mailings that explain general aims of the study as well as the benefits and costs of voluntary participation. The family group in which a parent must manifest a mental health problem (other than alcohol use) will be solicited from a mailing list of recently diagnosed parents suffering from affective disorders, anxiety disorders, eating disorders, or borderline personality disorder. Families indicating an interest will be invited to participate in an initial screening. Each individual who participates fully in the screening will receive $25.

All screening will be completed during the sixth to twelfth months. Subjects will fill out a consent form that describes all procedures. At this session, parents will fill out the Substance Use History and a demographics questionnaire on each of their participating offspring. The adolescents will fill out a short MAST on each parent, and all children will fill out the CAST. From the results of these instruments, families will either be assigned to one of the four cells, or they will receive a letter thanking them for their participation. Children from the

rejected families (usually due to meeting the criteria for an already-filled cell) will be offered an opportunity to earn an additional $5 by pre-testing the discrimination tasks.

From the twelfth to the eighteenth month, all participants will undergo an initial family session at which the primary subject will undergo the discrimination task and accompanying measures. Parent(s) will fill out FACES, the Hassles Scale, the Child Behavior Checklist (on each participating child), and the Middle Childhood Temperament Questionnaire (on children up to the age of 12). Children and adolescents will fill out FACES, the Life Events Checklist, both sibling relationship questionnaires, and the embedded alcohol question. Adolescents will also complete the Substance Use History, the A-COPE, and the Sentence Completion Test. The identified (primary) child or adolescent subject from each family will then separately undergo one or the other discrimination task (counterbalanced) after a 10-minute habituation period of being hooked up to the sphygmomanometer and computer monitor leads. Readings of heart rate and blood pressure will be taken at the beginning of the hook-up, the commencement of the discrimination task, after every four problems, and at the end. Heart rate will also be continuously monitored via biological measurement computer program. This subject will also fill out the Social Support Questionnaire.

The two subsequent contacts with all subjects will occur at approximately one-year intervals. During the year following the

initial session (nineteenth through thirtieth month), all subjects will be asked to come in for a brief session. Parents will again fill out the Hassles Scale, and the Child Behavior Checklist (on each child). Children and adolescents will fill out the Life Events Checklist and SIDE. This exact procedure will be repeated with all subjects during the thirty-first to forty-second months.

The final contact with all subjects will occur during the forty-third through fifty-fourth months. Parents will update their Substance Use Histories, demographic information on the children, FACES, the Hassles Scale, and Child Behavior Checklist. Virtually all of the juvenile participants will be adolescents by this point. Therefore the Middle Child Temperament Questionnaire will be omitted. All adolescent and young adult subjects will complete Substance Use Histories, A-COPE, Life Events Checklist, Sentence Completion Test, FACES, and the sibling instruments. The primary subject from each family will then undergo the other discrimination task with accompanying physiological measures, as well as fill out the social support questionnaire once again. The final six months of the project will be used in part to track down less cooperative subjects, but is primarily set aside for data analysis.

All data will be collected by trained graduate research assistants from social work, clinical psychology, nursing, or educational psychology. These research assistants will be

trained by the principal investigators in group sessions, as a means of enhancing consistency. Interviewer equivalence will be evaluated by the principal investigators prior to data collection and at three month intervals by means of analyzing videotapes of trial sessions with non-subject families.

Analyses

The two samples of children and adolescents (from clinical and control families) will be compared along demographic dimensions such as gender, age, and family composition. These comparisons will be in the form of chi-square analyses, and directed towards the assessment of comparability of the sample groups.

Analysis of variance with baseline scores as covariates will be used to compare grouped data on discrimination scores, heart rate, and blood pressure. Gain or change scores for these variables between times 1 and 2 will also be compared. MANOVA and ANCOVA will also be used to analyze other domain variables.

The child/adolescent adaptation data represented by the behavior profiles, life challenge profiles, interpersonal problem solving, alcohol involvement, and sibling relationships will be compared across the four groups. Analysis of variance and chi-square statistical methods will be employed to differentiate any natural groupings on these dimensions--which may then be used in multivariate general linear modeling with the results of the discrimination task.

The adaptation indices will be examined cross-sectionally for developmental or age-related trends in the data. Adaptation data will also be examined through correlational techniques in order to uncover potentially relevant means of assessing general adaptive status.

It is foreseeable that indices of child adaptation and adjustment status can be generated through compression of data from all the peripheral instruments. Within each variable domain, the feasibility of generating composite variables will be explored. For example, it may be possible to establish a schema for scoring "exposure to parental alcoholism" by collapsing across items or measures, such as duration, severity, and child perspective. Variables within each domain will be analyzed using MANOVA, MANCOVA, discriminant analyses, and other multiple regression analyses.

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APPENDIX A
Estimate of the Number of Subjects Needed for Sufficient Power

Wike (1985)[1] provides a formula for doing a power analysis of a proposed experiment in order to determine the minimum cell or batch size necessary to achieve sufficient power. Because population parameters are not known, previous research with the most similar design is used to estimate the required parameters.

The following factors are necessary:

1) alpha level (the criterion of significance)
2) size of N (each batch size)
3) gamma, τ (the effect size in the population)
4) delta, δ (a summary concept bridging τ and N)

Equations:

$$\tau = \frac{\mu_1 - \mu_2}{\sigma} \qquad \delta = (\tau)\sqrt{\frac{N_g}{4}}$$

Gamma equals the difference in population means for two separate batches divided by the anticipated standard deviation. (Assume $\sigma_1 = \sigma_2 = \sigma$.)

Delta equals gamma times the square root of N_g (batch size) divided by the number of independent means (six in this example). (Assume $N_g = N_1 = N_2 = \ldots = N_4$.)

Let us look at Finn et al. (1992) to estimate gamma. Their study included a measure of cardiac reactivity in response to a stressor (signaled shock). The absolute difference in heart rate change (beats per minute) among the three groups (multi-generational history of alcoholism, uni-generational history, no history) varied in either direction from 3 to 6 beats per minute (BPM). Using a conservative estimate of a 4 BPM for the top of the gamma equation, an estimate (from the same article) of 6 for standard deviation, and a batch size of 75:

$$\tau = \frac{4}{6} = .75, \text{ and } \delta = (.75)\sqrt{\frac{75}{4}} = 3.24.$$

According to the power table in Wike's text (alpha set at .05, two-tailed), power is greater than .89. This number does not by any means represent a wild gamble. Even halving the cell size

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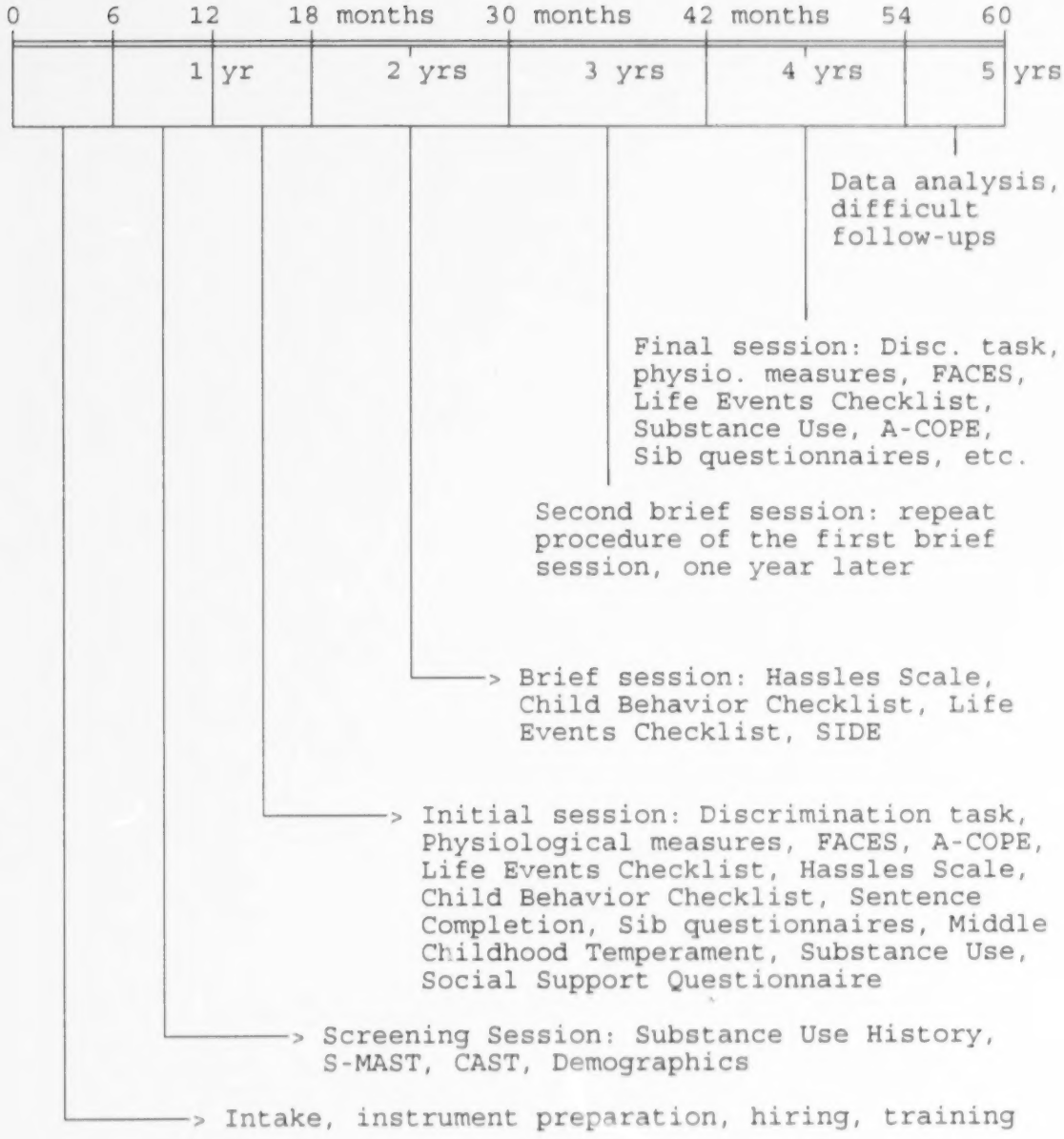
[1] Wike, E. L. (1985). Numbers: A primer of data analysis. Columbus, OH: Charles E. Merrill Publishing.

would result in a power estimate of around .60--still not bad odds. Admittedly, these estimates are crude, and the proposal does aim to address more than one effect. Therefore, even though the effect size estimate is conservative, it appears prudent to set a goal of 75 primary subjects (and families) per cell in this four-cell design.

APPENDIX B

Timeline


0
6
12
18 months
30 months
42 months
54
60
1 yr
2 yrs
3 yrs
4 yrs
5 yrs
Data analysis, difficult follow-ups
Final session: Disc. task, physio. measures, FACES, Life Events Checklist, Substance Use, A-COPE, Sib questionnaires, etc.
Second brief session: repeat procedure of the first brief session, one year later
Brief session: Hassles Scale, Child Behavior Checklist, Life Events Checklist, SIDE
Initial session: Discrimination task, Physiological measures, FACES, A-COPE, Life Events Checklist, Hassles Scale, Child Behavior Checklist, Sentence Completion, Sib questionnaires, Middle Childhood Temperament, Substance Use, Social Support Questionnaire
Screening Session: Substance Use History, S-MAST, CAST, Demographics
Intake, instrument preparation, hiring, training